Station Circular 35 April, 1923

Oregon Agricultural College

Experiment Station

The Cherry-fruit Fly

By

A. L. LOVETT, Entomologist

CORVALLIS, OREGON

The regular bulletins of the Station are sent free to the residents of Oregon who request them.

The Cherry Fruit-Fly

Wormy cherries are damaging Oregon's commercial cherry fruit industry. The situation is serious and should receive attention. Control methods have been developed that are safe and practical and applicable to Oregon conditions. The cost of the treatment is low and under normal conditions will result in a marked decrease in the percentage of damaged fruit.

Description. The "worm" in the cherry fruit is the maggot of a fly. It is of the typical maggot form, white or yellowish in color, and slightly more than one-fourth inch in length when full grown.

The adult is a two-winged fly, belonging to the "fruit-flies" or *Trypetidae*, and closely related to the dreaded Mediterranean fruit-fly. It is about two-thirds the size of the ordinary house-fly, blackish, with the head and legs yellow. The most distinguishing mark is the conspicuous dark cross bands or "pictures" on the wings.

Fig. 1. The Cherry Fruit-fly. Illustration of adult fly to show general appearance and the typical banded wings (enlarged).

Life-history and Habits. The winter is passed in the soil. Sometime during early June, about the time the Royal Ann is beginning to show good color, the adult fruit-flies appear in the field. The date of their appearance will vary with the season, but will approximate June 5 to 20. They are present in the orchard for about three weeks. These flies are sun-lovers. For the first few days of their appearance they "sport" about in the sunshine on the upper surface of the outer leaves, lapping up greedily the droplets of moisture and honey dew deposited on the foliage.

After a period of about ten days, egg laying begins. The flies sting the cherry with their sharp ovipositer and place the egg underneath the surface of the skin of the fruit. The young maggots hatch in five to seven days and commence feeding on and tunneling through the pulp of the cherry. The time the maggot will spend in the fruit varies with the degree of ripeness of the cherry, but will average about two weeks. Ordinarily the maggots do not become full grown until the fruit is ripe or even over-ripe, though undoubtedly the fact of their presence in the fruit hastens the development of this over-ripe condition.

The maggots mature during the last half of July, work their way out of the fruit, drop to the ground and burrow down beneath the surface a few inches. Here they change to a small, reddish, capsule-like puparium. They remain in the soil in this condition until the following June, when they again emerge as adult flies.

The cherry fruit-flies therefore pass nearly ten months of the year in the soil. Cultivation is undoubtedly of some value in destroying them, but does not prove an effectual control. The active period of the insect in the field is confined to a few brief weeks in June and early July. Prompt action at the proper time is essential for effective control.

The Injury. Wormy cherries show no particular outward evidence of infestation until the fruit is ripe. Soon after picking, or where the ripe fruit remains on the tree for a time, the affected fruit shrivels slightly, the side turns brown, and small holes appear in the skin. An examination of the interior reveals the plump, white maggot; the flesh of the cherry discolored and in a more or less advanced stage of decay.

The later dark-meated varieties of cherry, such as the Late Duke and Lambert, are most likely to be wormy. The fruit of seedling cherry trees is usually heavily infested and affords an ideal breeding place for propagating the worms, as the seedling cherries tend to ripen later and the ripe fruit remains on the trees longer. In seasons when the ripening period for cherries is unusually delayed, as in 1918, a general infestation of all medium and late varieties may be expected. Undoubtedly the infestation of the earlier, white-meated cherries is much more common than is generally supposed. The maggots would normally be very small in size when these cherries are ripe and in the white pulp would be inconspicuous and escape detection. Sour cherries are attacked but apparently are not equally attractive to the fly.

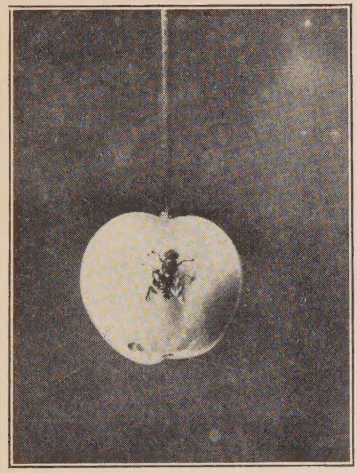

Fig. 2. The Cherry Fruit-fly. Adult fly on cherry fruit, natural size. (After Caesar, Ontario Dept. of Agriculture.)

Cherry Maggot Control

The fact that the maggots hatch out underneath the skin of the fruit as they do precludes any possibility of reaching these worms with a spray. Hence we must center our attack on the adult flies. Taking advantage of the fact that the flies are usually out and active for a period of about ten days before they commence laying eggs, and remembering their habit of lapping up greedily any sweet substances on the surface of the foliage during this period, there has been developed the sweetened poison-bait spray treatment for the adult flies.

Sweetened Poison Bait Spray. The formula for the preparation of the poison bait is as follows:

Lead arsenate	½ pound
Molasses or sirup (never honey)	2 quarts
Water	10 gallons

This amount is sufficient for spraying approximately fifty trees.

Three Spray Applications Should Be Given. The first should be given when the adult flies appear. This will be about the time the Royal Anns begin to show good color, or about June 5 to 20; the second, about ten days after the first; and a third spray, about one week after the second. Two applications might possibly suffice if well timed and in case no showers of rain occur. Rain will largely discount the effect of previous applications and may necessitate a repetition of the spray.

In applying the spray, take care to use no more material on the tree than is necessary. About one pint to one quart of solution to the

tree is sufficient. There is no object gained by spraying the fruit itself, and heavy applications of spray apparently do no more good in maggot control and may burn the foliage. Apply the solution as fairly fine droplets to the upper surface of the outer leaves. It is advisable to spray the foliage of adjacent trees and shrubs as well.

A tank of spray will cover a fair-sized tract, the whole operation requiring a comparatively brief period. This operation compares in no way with the labor and expense involved in applying a regular orchard spray. Expensive spraying equipment is not essential. While the presence of a few droplets of spray on the fruit would not prove serious, one should make reasonable effort to avoid spraying the fruit. For the earlier varieties of cherries probably the last spray might be omitted.

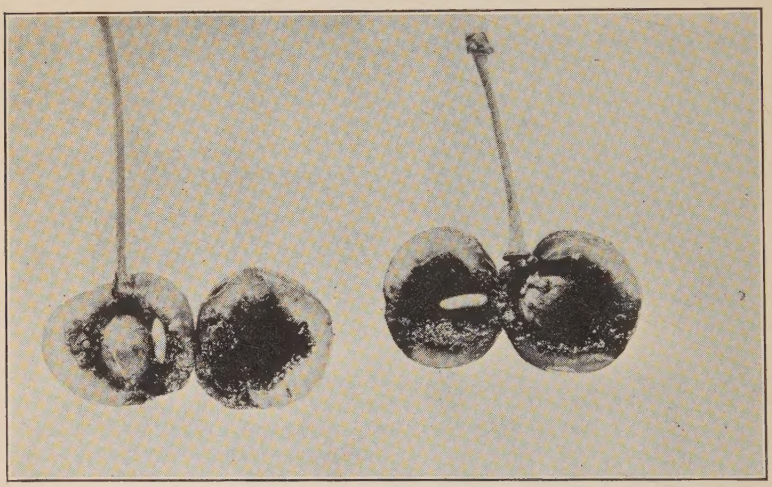

Fig. 3. The Cherry fruit maggot inside the fruit. (After Caesar, Ont. Dept. of Agri.)

The date when spraying should actually begin for each locality is somewhat difficult for the individual grower to determine. The Experiment Station will endeavor, so far as funds and assistance will permit, to determine the spray dates for the various localities and publish this advice through the local press.

Through the intelligent application of a poison bait spray the percentage of wormy cherries can be reduced 85 percent in Oregon. If a consistent spray program were followed up for a few years the pest in the state would be materially cut down. Cherries are worth the effort required to protect them. The future of our commercial cherry industry depends upon reducing this worm infestation. Those contemplating spraying should plan to have materials and equipment available for spraying when the proper dates arrive. The period for effective control is limited. Prompt action is required for best results.